

CLAIMS

1. A silicone-based adhesive sheet, comprising a first layer of a clay-like curable silicone composition on one side of said sheet, and a second layer of a slower curing clay-like silicone composition than said first layer on the other side of said sheet.
- 5 2. The silicone-based adhesive sheet of Claim 1, wherein either of said clay-like curable silicone compositions has a plasticity number of from 100 to 800, as specified by JIS K 6249.
3. The silicone-based adhesive sheet of Claim 1, wherein either of said clay-like curable silicone compositions is a hydrosilylation-curable silicone composition.
- 10 4. The silicone-based adhesive sheet of Claim 3, wherein either of said hydrosilylation-curable silicone compositions is a curable silicone composition comprising (A) an organopolysiloxane having at least two alkenyl groups per molecule; (B) a filler; (C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule; (D) an adhesion promoter; and (E) a hydrosilylation catalyst.
- 15 5. The silicone-based adhesive sheet of Claim 1, further comprising a protective film on at least one side of the silicone-based adhesive sheet.
6. A silicone-based adhesive sheet comprising a cured silicone layer on one side of said sheet, and having a layer of clay-like curable silicone composition on the other side of said sheet.
- 20 7. The silicone-based adhesive sheet of Claim 6, wherein said clay-like curable silicone composition has a plasticity number of from 100 to 800, as specified by JIS K 6249.
8. The silicone-based adhesive sheet of Claim 6, wherein said clay-like curable silicone composition is a hydrosilylation-curable silicone composition.
- 25 9. The silicone-based adhesive sheet of Claim 8, wherein said hydrosilylation-curable silicone composition comprises (A) an organopolysiloxane having at least two alkenyl groups per molecule; (B) a filler; (C) an organopolysiloxane having at least two silicon-

bonded hydrogen atoms per molecule; (D) an adhesion promoter; and (E) a hydrosilylation catalyst.

10. The silicone-based adhesive sheet of Claim 6, further having a protective film on at least one side of the silicone-based adhesive sheet.

5 11. A method of bonding a semiconductor chip to a chip attachment component, comprising the steps of:

- (1) producing the semiconductor chip by dicing a laminated body comprising a cured silicone layer bonded to a wafer, a layer of clay-like curable silicone composition firmly bonded to said cured silicone layer, a protective film firmly bonded to said layer of clay-like curable silicone composition, and a sheet adhesively attached to film;
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- (2) peeling said protective film and said sheet from said chip;
- (3) bonding said semiconductor chip to said chip attachment component by pressing said semiconductor chip to said chip attachment component via said layer of clay-like curable silicone composition; and
- 15 (4) curing said layer of clay-like curable silicone composition.

12. The method of Claim 11, wherein the cured silicone layer and the layer of clay-like curable silicone composition firmly bonded to the cured silicone layer are formed by applying a first layer of a clay-like curable silicone composition (I) to the wafer, applying a second layer of a clay-like curable silicone composition (II) endowed with a lower curing rate than the first layer, and curing the first layer, such that the layer of composition (II) is prevented from being cured.
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13. The method of Claim 12, wherein either of said clay-like curable silicone compositions (I) and (II) has a plasticity number of from 100 to 800, as specified by JIS K 6249.

25 14. The method of Claim 12, wherein either clay-like curable silicone composition (I) or clay-like curable silicone composition (II) is a hydrosilylation-curable composition.

15. The method of Claim 14, wherein either of said hydrosilylation-curable silicone compositions is a curable silicone composition comprising at least (A) an organopolysiloxane having at least two alkenyl groups per molecule; (B) a filler; (C) an

organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule; (D) an adhesion promoter; and (E) a hydrosilylation catalyst.

16. A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the method comprises:

a) fabricating the silicone-based adhesive sheet having a first layer of clay-like curable silicone composition (I) on one side and having a second layer of a slower curing clay-like curable silicone composition (II) than said first layer of composition (I) on the other side, and

b) curing said first layer of composition (I) so that said second layer of composition (II) remains uncured while said first layer of composition (I) is kept in contact with the semiconductor chip, and said second layer of composition (II) is subsequently cured while kept in contact with the semiconductor chip attachment component.

17. A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the method comprises:

a) fabricating the silicone-based adhesive sheet having a first layer of clay-like curable silicone composition (I) on one side and having a second layer of a slower curing clay-like curable silicone composition (II) than said first layer of composition (I) on the other side, and

b) curing said first layer of composition (I) so that said second layer of composition (II) remains uncured while said first layer of composition (I) is kept in contact with the semiconductor chip attachment component, and said second layer of composition (II) is subsequently cured while kept in contact with the semiconductor chip.

18. The method of Claim 16 or 17, wherein either of said clay-like curable silicone compositions has a plasticity number of from 100 to 800, as specified by JIS K 6249.

19. The method of Claim 16 or 17, wherein either of said clay-like curable silicone compositions is a hydrosilylation-curable composition.

20. The method of Claim 19, wherein said hydrosilylation-curable silicone composition comprises at least (A) an organopolysiloxane having at least two alkenyl groups per molecule; (B) a filler; (C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule; (D) an adhesion promoter; and (E) a hydrosilylation catalyst.

5 21. A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the silicone-based adhesive sheet comprises a cured silicone layer on one side and a layer of clay-like curable silicone composition on the other side; wherein the method comprises:

10 a) bonding said cured silicone layer so that the layer of clay-like curable silicone composition remains uncured while said cured silicone layer is kept in contact with a semiconductor chip, and subsequently

b) curing said layer of clay-like curable silicone composition while said layer of clay-like curable silicone composition is kept in contact with a semiconductor chip attachment component.

15 22. A method of fabricating a semiconductor device comprising a semiconductor chip, a silicone-based adhesive sheet, and a semiconductor chip attachment component, wherein the silicone-based adhesive sheet comprises a cured silicone layer on one side and a layer of clay-like curable silicone composition on the other side; wherein the method comprises:

20 a) bonding said cured silicone layer so that the layer of clay-like curable silicone composition remains uncured while said cured silicone layer is kept in contact with the semiconductor chip attachment component, and subsequently

b) curing said layer of clay-like curable silicone composition while said layer of clay-like curable silicone composition is kept in contact with said semiconductor chip.

23. The method of Claim 21 or 22, wherein said clay-like curable silicone composition
25 has a plasticity number of from 100 to 800, as specified by JIS K 6249.

24. The method of Claim 21 or 22, wherein said clay-like curable silicone composition is a hydrosilylation-curable composition.

25. The method of claim 24, wherein said hydrosilylation-curable silicone composition comprises (A) an organopolysiloxane having at least two alkenyl groups per molecule; (B)

a filler; (C) an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule; (D) an adhesion promoter; and (E) a hydrosilylation catalyst.

26. A semiconductor device prepared by the method of Claim 11, 12, 13, 14, 15, 16, 17, 21, or 22: